

BROOKHAVEN NATIONAL LABORATORY
NATIONAL SYNCHROTRON LIGHT SOURCE
MEMORANDUM

DATE: August 13, 2004

TO: Ed Lessard, Chair BNL ESH Committee

FROM: W. Robert Casey, Nicholas F. Gmür, Xijie Wang

SUBJECT: BNL ESH Committee Review of Updated DUV-FEL SAD and ASE
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The Deep Ultraviolet-Free Electron Laser (DUV-FEL) facility located in Building 729, formerly known as the Source Development Laboratory (SDL), operates under two authorization documents:

Safety Assessment Document (SAD), Rev. E (dated Feb. 2003):

http://www.nsls.bnl.gov/organization/Accelerator/duvfel/documents/SAD/SAD_RevE_final.pdf

Accelerator Safety Envelope (ASE), Rev. A (dated Oct. 5, 2001):

<http://www.nsls.bnl.gov/organization/Accelerator/duvfel/documents/ase.htm>

The DUV-FEL operates at an energy of 230 MeV and is currently upgrading the facility to operate at 300 MeV with the addition of one new linac section and two klystron assemblies. ASE/Rev. A is written for 230 MeV operations. SAD/Rev. E (and associated appendices) includes dosimetry calculations for 300 MeV operations but does not include the equipment configuration information for that energy.

To prepare for the upgrade, the DUV-FEL SAD and ASE have been revised to reflect 300 MeV operations.

Draft Safety Assessment Document, Rev. F:



SAD Figures:

<http://www.nsls.bnl.gov/organization/Accelerator/duvfel/documents/SAD/figures.htm>

SAD Appendices:

<http://www.nsls.bnl.gov/organization/Accelerator/duvfel/documents/SAD/appendices.htm>

Draft Accelerator Safety Envelope, Rev. B:



ASE Rev
B_BNLReview.doc

The draft SAD and ASE were reviewed and approved by the NSLS ESH Committee on July 22, 2004.

We are submitting the documents to you for review and recommendation for approval by the BNL ESH Committee. We would like to determine your preference for the review format and suggest two options:

1. The BNL ESH Committee has reviewed earlier versions of both documents. The changes in the current drafts could be reviewed as a “desk audit” by the members of the Committee. The Committee Secretary could collate the comments and forward them to the NSLS for implementation.
2. A presentation by DUV-FEL staff at a meeting of the BNL ESH Committee members.

An addendum to this memo explains what you will find in the links given above.

We look forward to your reply.

cc. R. Travis

Addendum: Explanation of DUV-FEL Draft SAD and ASE Revisions

Draft Safety Assessment Document, Rev. F

- The text of the draft SAD has been left in “track-changes” format allowing the reader to locate and determine the nature of the changes.
- The following track-changes are not included: SDL → DUV-FEL, punctuation, spelling and removal of blanks (Note: “SDL” has not been changed in all the linked documents).
- Some grammar changes were made to improve readability; some acronyms were spelled out.
- A number of dosimetry calculations were updated for 300 MeV operations.
- Many of the revisions reflect the changes in equipment configuration for 300 MeV operations and include details concerning the linear accelerator, klystron assemblies, lasers and parameter tables.

SAD Figures

- Figure 1 (Linac Block Diagram), Figure 3 (DUV-FEL Plan View) and Figure 5 (DUV-FEL Plan view with door and loss point designations) have been updated.

SAD Appendices

- Appendix 1 is currently being updated by Joe Levesque to reflect an increase in borated polyethylene shielding within the facility.
- Appendix 4 now has links to the NEPA and NESHAPS documents; these links do not exist in Rev. E, only references to the documents are made.
- Appendix 7 has been updated to reflect upgrades in the laser interlock systems.

Draft Accelerator Safety Envelope, Rev. B

- The text of the draft ASE has been left in “track-changes” format allowing the reader to locate and determine the nature of the changes.
- Section 3.2 statements referring to “formal procedures” were deleted. More detailed text was inserted: *“Implementation of the radiation monitoring will be in accordance with DUV-FEL procedures ([SDL Operator Response to HPI Beam Loss and Chipmunk Radiation Monitors](#); [DUV-FEL Operation Check List](#)).”*
- Sections 4.5 (deployment of radiological postings) and 4.6 (deployment of TLD dosimeters) were deleted at the suggestion of the NSLS Facility Support Representative as these are covered in the lab level BNL Radiological Control Manual.
- Section 4.7 (work above 96”, on the north shield wall and on the roof must be approved) was moved to Section 5 Operating Envelope as being more appropriate in this section. In order to improve this section, the start of the text was amended to say, *“Due to radiological concerns, all...”*.
- Section 5.2 references to 230 MeV were changed to 300 MeV. Active monitoring of beam energy will be provided during beam tune-up.
- Section 5.4 (a fault producing a major beam loss should not exceed a time period of 5 minutes) was deleted and Section 5.5 was enhanced to read, *“Radiation exposure to personnel in the building or in areas adjacent to the building will be addressed in DUV-FEL procedure ‘[DUV-FEL Operator Response to HPI Beam Loss and Chipmunk Radiation Monitors](#)’ and should not exceed 10 mrem from a fault condition.”*